Date: Wed, 15 Sep 93 04:30:21 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #47
To: Ham-Ant

Ham-Ant Digest Wed, 15 Sep 93 Volume 93 : Issue 47

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: Tue, 14 Sep 1993 21:59:45 GMT
From: cs.yale.edu!wcsub.ctstateu.edu!ritterbus001@yale.arpa
Subject: 11m Mag-mount ==> 2m ?
To: ham-ant@ucsd.edu

This may be a pipe dream, but is there any way to convert an 11m mag-mount
(ok, yes, it really was a CB antenna) to be usable on 2m. Can I reclaim
anything besides the magnet?

Jim Ritterbusch
ritterbus001@wcsu.ctstateu.edu - or - ne22@radiomail.net (wireless)
One if by LAN, two if by C, three if by C++

Date: Tue, 14 Sep 1993 05:11:00 GMT
From: mentor.cc.purdue.edu!sage.cc.purdue.edu!aj@purdue.edu
Subject: Antenna switches and frequency

To: ham-ant@ucsd.edu

bodoh@dgg.cr.usgs.gov (Tom Bodoh) writes:

>Is the 500 Mhz limitiation due to tolerances in the PL-259 (UHF)
>connector design or in the switch itself?

  Despite the name, "UHF" or PL-259/SO-239 connectors aren't very useful above 100 to 150MHz. They are an ancient design, and not guaranteed to have a constant impedance across the length of the coupling. Connectors like N, SMA, BNC, and TNC all are guaranteed to be reasonably constant impedance. N-connectors are often used to handle high power in transmitting applications, but are also good for receiving. TNC is what comes on cell-phones, and is just a threaded BNC (the 'B' stands for "bayonet"). These can handle medium powers. SMA connectors are good to really high frequencies and are physically small, but I don't think I'd run more than 10W through one.

  Again, they're all good for receiving, and will pass signals up to 1GHz with only minimal losses. Try to stay away from stuff with PL-259/SO-239 connectors, if you can, especially if you ever plan on doing any transmitting.

:   John Dormer
:   aj@sage.cc.purdue.edu

Date: 14 Sep 93 19:52:32 GMT
From: ogicse!emory!nntp.msstate.edu!olivea!grapevine.lcs.mit.edu!
grapevine.lcs.mit.edu!shep@network.ucsd.edu
Subject: Antenna switches and frequency
To: ham-ant@ucsd.edu

I know you said "At low frequencies, only i^2*r should be important",
but things are different when not at low frequencies.

But using your numbers for the N connector at 9GHz:

if insertion loss = 0.15db then

  P_out = 10^(-0.015) * P_in = .966 * Pin

and

  P_diss = P_in - P_out
         = P_in * (1 - .966)
         = P_in * (0.034)

so for P_in = 20000W,

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  P_diss = 20000W * ( 0.034 )
         = 680 W
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I don't think trying to shove 20000 watts through an N connector would
be a good idea (at any frequency significantly above DC).

Similarly, I don't believe a BNC can handle anywhere near 5000W.

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     -Tim Shepard
      shep@lcs.mit.edu
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Date: Tue, 14 Sep 1993 17:45:02 GMT
From: mentor.cc.purdue.edu!sage.cc.purdue.edu!aj@purdue.edu
Subject: Antenna switches and frequency
To: ham-ant@ucsd.edu

  In a response to this thread which came in email, someone challenged my assertions about power levels in connectors. We both agreed that the true limiting factor is cable (another semi-religous topic sometimes), and not usually the connector. Check out these power ratings. He's given me permission to post this info which he sent me. Keep in mind that nothing exists which can give a >true< 1.0:1.0 SWR, so your mileage will vary.

  Also, as he further pointed out, due to the ratio of center conductor diameter to surrounding metal ground (case) in the PL-259/SO-239, the impedance of these connectors will always fall far below 50 ohms, even with a hard vacuum between the center conductor and case. I could do the math to figure out exactly what the impedance is if anyone is interested.

  Remember, an impedance mismatch reduces the power you can transfer without turning the connector into a plasma weapon. :)

Return-Path: tomb@lsid.hp.com
Date: Tue, 14 Sep 93 10:30:56 -0700
From: Tom Bruhns <tomb@lsid.hp.com>
Subject: Re: Antenna switches and frequency

Condensed from Kings and Amphenol catalogs:

SMA:
   Max RMS working volts: 500 (Kings) 350 (Amphenol)

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     (with appropriate cable)
   Insertion loss 0.03dB*sqrt(f_GHz)
   Contact resistance (oops, didn't write it down; .002 ohms?)

BNC:
   Max RMS working volts:  500
   Insertion loss 0.2dB max at 3GHz
   Contact resistance .0017 ohms max

N:
   Max RMS working volts:  1000
   Insertion loss 0.15dB max at 9GHz
   Contact resistance .0012 ohms max

Power ratings were not given.  If voltage is the
limitation:

    1000Vrms at 50 ohms (1:1 SWR) = 20000W
     500Vrms at 50 ohms (1:1 SWR) =  5000W
     350Vrms at 50 ohms (1:1 SWR) =  2450W

Sanity checks:  avoid excessive i^2*r heating in the contact
resistance, and avoid excessive power in the insertion loss.
At low frequencies, only i^2*r should be important:

    20000W at 50 ohms = 20 amps; 20^2*.0012 = .48W
     5000W at 50 ohms = 10 amps; 10^2*.0017 = .17W

With teflon insulation, these should be OK.

Cheers,
Tom

(But I'd be really careful running even close to
these power levels!  A temperature sensor on the
connector will tell you if you are dissipating too
much power in it...)
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:    John Dormer
:    aj@sage.cc.purdue.edu

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Date: 15 Sep 93 01:17:19 GMT
From: world!howi@uunet.uu.net
Subject: Characterizing an urban antenna
To: ham-ant@ucsd.edu
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I'm going to put up a 40 and/or 80M dipole over the roof of a downtown Boston apartment building. I'm wondering what its effective height will be so I can calculate its dimensions and try to predict performance. The roof surface is about 95' above the ground and I can get the dipole center about 25' above that and the ends about 10' over the roof level. The building has a steel frame and under the roofing material there is at least some (I can't tell how much) metal flashing. Surrounding the building are other buildings. Most are about 50' high, but one or two, across the street, are taller than mine. Any ground is paved, 19th century landfill. Do I get any advantage from the height above ground, or is the antenna effectively at its height over the roof, or, somewhere in between? Any other comments about alternatives are also most welcome.

Tnx/73,

Howie, wb2cpu
howi@world.std.com

Date: 14 Sep 93 19:53:50 GMT
From: news-mail-gateway@ucsd.edu
Subject: Horizontal Loops
To: ham-ant@ucsd.edu

Hello,

Does anyone have any experience with full wave horizonal loop antennas? I am interested in data, anecdotes, stories, tall tales, etc., on these antennas. I am ESPECIALLY interested in anyone who has used a 160m full wave horizonal loop.

73, Erich KA6AMD @ WA6YBN.#SOCA.CA.USA.NA
Internet: muschinske%39a.decnet@scfb.chinalake.navy.mil

End of Ham-Ant Digest V93 #47
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